

## CLAIMS

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1. A method of estimating channel coefficients ( $h$ ) in a multi carrier system operating in accordance with a block-code based transmit diversity scheme, in which a data content ( $\mathbf{C}^{(i)}$ ) of a code matrix ( $\mathbf{C}$ ) is multiplexed in a frequency domain, comprising:
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- a) determining a phase ramp ( $\varphi_{est}$ ) in the frequency domain or an equivalent ( $\Delta t$ ) thereof in the time domain, the phase ramp ( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof being comprised within a receive signal ( $\mathbf{Y}_{\Delta t}$ ) after timing synchronization;
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- b) processing the receive signal ( $\mathbf{Y}_{\Delta t}$ ) to remove the phase ramp ( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof; and
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- c) estimating the channel coefficients ( $h$ ) on the basis of the processed receive signal ( $\mathbf{Y}_{\Delta t}$ ).
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2. The method of claim 1, wherein the phase ramp ( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof is determined by way of estimation.
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3. The method of claim 2, wherein the estimation is performed by linear regression.
4. The method of one of claims 1 to 3, further comprising the step of performing timing synchronization with the object of minimizing intersymbol interference.
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5. The method of one of claims 1 to 4, wherein at least one of steps a) and b) is performed in the frequency domain.

6. The method of one of claims 1 to 4, wherein at least one of steps a) and b) is performed in a time domain.
- 5 7. The method of one of claims 1 to 6, wherein after timing synchronization the receive signal ( $\mathbf{Y}_{\Delta t}$ ) is split and fed into a channel estimation branch (56) on the one hand and a demodulation branch (58) on the other hand, and wherein the phase ramp ( $\phi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof is removed in the channel estimation branch (56).
- 10 8. The method of one of claims 1 to 6, wherein after timing synchronization the receive signal ( $\mathbf{Y}_{\Delta t}$ ) is split and fed into a channel estimation branch (56) on the one hand and a demodulation branch (58) on the other hand, and wherein  
15 the phase ramp ( $\phi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof is removed prior to splitting of the receive signal ( $\mathbf{Y}_{\Delta t}$ ).
- 20 9. The method of one of claims 1 to 7, further comprising introducing the phase ramp ( $\phi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof into the estimated channel coefficients ( $\hat{h}$ ).
- 25 10. The method of one of claims 1 to 9, further comprising demodulating the receive signal ( $\mathbf{Y}_{\Delta t}$ ) utilizing the estimated channel coefficients ( $\hat{h}$ ).
- 30 11. The method of one of claims 1 to 10, wherein the block-code based transmit diversity scheme of space-frequency block coding (SFBC) or of permutation in the frequency domain is employed.
12. A computer program product comprising program code portions for performing the steps of one of claims 1 to 11 when the product is run on a computer.
- 35 13. The computer program product of claim 12 stored on a computer readable recording medium.

14. An estimating stage (60) for estimating channel coefficients (h) in a multi carrier system operating in accordance with a block-code based transmit diversity scheme in which a data content ( $C^{(i)}$ ) of a code matrix (C) is multiplexed in a frequency domain, comprising:

a) a unit (48) for determining a phase ramp ( $\varphi_{est}$ ) in the frequency domain or an equivalent ( $\Delta t$ ) thereof in the time domain, the phase ramp ( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof being comprised within a receive signal ( $Y_{\Delta t}$ ) after timing synchronization;

b) a unit (50) for processing the receive signal ( $Y_{\Delta t}$ ) to remove the phase ramp ( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof; and

c) a unit (44) for estimating the channel coefficients (h) on the basis of the processed receive signal ( $Y_{\Delta t}$ ).

15. The estimating stage according to claim 14, further comprising a node (54) for splitting a signal path (55) after timing synchronization into a channel estimation branch (56) on the one hand and a demodulation branch (58) on the other hand, and wherein the unit (50) for processing the receive signal ( $Y_{\Delta t}$ ) is arranged in the channel estimation branch (56).

16. The estimating stage according to claim 14, further comprising a node (54) for splitting a signal path (55) after timing synchronization into a channel estimation branch (56) on the one hand and a demodulation branch (58) on the other hand, and wherein the unit (50) for processing the receive signal ( $Y_{\Delta t}$ ) is arranged in the signal path (55) prior to the node (54).

17. The estimating stage according to claim 14 or 15, further comprising a unit (52) for introducing the phase ramp

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( $\varphi_{est}$ ) or the equivalent ( $\Delta t$ ) thereof into the estimated channel coefficients ( $\hat{h}$ ).

- 5        18. A transceiver of a wireless communication system comprising a receiver stage (40) with an estimating stage (60) according to one of claims 14 to 17.

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